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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,979	01/16/2004	Frederick M. Ausubel	00786/408002	8737

21559 7590 01/05/2006

CLARK & ELBING LLP
101 FEDERAL STREET
BOSTON, MA 02110

EXAMINER	
ROBINSON, HOPE A	

ART UNIT	PAPER NUMBER
1656	

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/758,979	AUSUBEL ET AL.	
	Examiner	Art Unit	
	Hope A. Robinson	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) *1 and 4-6* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2 and 3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/22/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: Notice to Comply

DETAILED ACTION

Application Status

1. Applicant's election without traverse of Group II (claims 2-3) on September 30, 2005 is acknowledged.

Claim Disposition

2. Claims 1-6 are pending. Claims 2-3 are under examination. Claims 1 and 4-6 are withdrawn from further consideration pursuant to 37 CFR 1.12(b), as being drawn to a non-elected invention, there being no allowable generic or linking claim.

Specification

3. The specification is objected to because of the following informalities:

(a) The specification is also objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. See page 13 for example. It is suggested that http:// is deleted.

(b) The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following is suggested: "Nucleic Acids, Proteins and Enterococcal Virulence Factors".

Sequence Compliance

4. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR1.821 through 1.825; applicant's attention is directed to the final rule making notice published at 55 FR 18230 (May 1, 1990), and 1114 OG 29 (May 15, 1990). To be in compliance, applicant is required to identify all amino acid sequences of at least 4 L-amino acids and at least 10 nucleotides by a sequence identifier, i.e., "SEQ ID NO:". The specification discloses sequences that have not been identified by a sequence identifier, see for example, page 11, Figures 15 B, D, F, H, J, L, N and P. If these sequences have not been disclosed in the computer readable form of the sequence listing and the paper copy thereof, applicant must provide a computer readable form of the "Sequence Listing" including these sequences, a paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification, and a statement that the content of the paper and computer readable form copies are the same and, where applicable, include no new matter as required by 37 CFR 1.821(e) or 1.821(f) or 1.821(g) or 1.821(b) or 1.825(d). See the attached Notice to Comply with the sequence rules.

Claim Rejections - 35 USC ∋ 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to

make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2-3 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claimed invention is directed to an isolated nucleic acid and vector, said nucleic acid consists of 45% sequence identity to SEQ ID NO:2, the complement thereof and fragments thereof, however, the specification lacks adequate written description to demonstrate to a skilled artisan that applicant was in possession of the claimed invention. The claims are not limited to a function for said nucleic acid fragments thereof. A skilled artisan cannot envision the detailed chemical structure of the claimed products as no description is provided for the vast amount of fragments encompassed in the claims.

Claims 2-3 are directed to a genus of nucleic acids having 45% sequence identity to SEQ ID NO: 2. Therefore, the genus as claimed is highly variable. The specification fails to provide any additional representative species of the claimed genus to show that applicant was in possession of the claimed genus. A representative number of species means that the species, which are adequately described are representative of the entire genus. The written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, disclosure of drawings, or by disclosure of relevant identifying characteristics, for example, structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation

between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus.

Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus. The claimed genus of nucleic acid could include non-functional proteins or proteins with a different function than the one described. Therefore, the genus of claimed nucleic acids encompasses widely variant species. As such, neither the description of the structure and function of SEQ ID NO: 2, for example, "45% sequence identity to SEQ ID NO:2 and is sufficient is sufficient to be representative of the attributes and features of the entire genus.

Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir.1991), states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in *possession of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*" (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed" (See *Vas-Cath* at page 1116). The skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore, conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. *See Fiers v. Revel, 25 USPQ2d 1601 at 1606 (CAFC 1993).*

Therefore, for all these reasons the specification lacks adequate written description, and one of skill in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

6. Claims 2-3 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the nucleic acid set forth in SEQ ID NO: 2, for example, does not reasonably provide enablement for any fragments thereof for the claimed sequence. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The enablement requirement refers to the requirement that the specification describe how to make and how to use the invention. There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is undue. These factors include, but are not limited to: Quantity of Experimentation Necessary; Amount of direction or guidance presented; Presence or absence of working examples; Nature of the Invention; State of the prior art and Relative skill of those in the art; Predictability or unpredictability of the art and Breadth of the claims (see *In re Wands, 858 F.2d at 737, 8 USPQ2d at1404 (Fed. Cir. 1988)*. The factors most relevant to the instant invention are discussed below.

The claims are overly broad in scope: Claims 2-3 broadly encompass all isolated nucleic acid comprising 45% sequence identity with SEQ ID NO:2 or a complement thereof or a sequence consisting essentially of SEQ ID NO:2 or a fragment thereof. The scope of the claims

includes variants and fragment of the sequence, which is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of nucleic acids encompassed in the claims. The disclosure is limited to a nucleic acid set forth in SEQ ID NO:2.

Lack of guidance and working examples: The working examples provided do not rectify the missing information in the instant specification pertaining to the claimed variant. The nature and properties of this claim is difficult to ascertain from the examples provided as one of skill in the art would have to engage in undue experimentation to construct the variants of the claimed invention and examine the same for function. The instant specification fails to provide guidance for making and/or using the entire scope of the claimed nucleic acids, which encompass variants and fragments of SEQ ID NO:2. A skilled artisan recognizes that such nucleic acids have the potentiality of encoding proteins having any function. The specification fails to provide guidance regarding those regions or fragments of SEQ ID NO:2 that are necessary for activity and which of those fragments may be elongated with additional nucleotides and maintain activity. Further, the specification fails to provide guidance as to methods of isolating and/or using those nucleic acids that do not encode a protein, those that encode non-functional proteins or those have a function other that the one desired which are all encompassed in the claims.

The high degree of unpredictability of the art: The nucleotide sequence of an encoding nucleic acid determines an encoded protein's structural and functional properties. Predictability of which potential changes can be tolerated in an encoded protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved, and detailed knowledge of the ways in which the protein's structure related to its function. The

positions within an encoding nucleic acid sequence where nucleotide modifications can be made with a reasonable expectation of success in obtaining an encoded protein with the desired activity are limited and the result of such modifications is unpredictable.

The state of the prior art: The state of the art provides evidence for the high degree of unpredictability as stated above. Seffernick et al. (J. Bacteriology, vol. 183, pages 2405-2410) disclose two polypeptides having 98% amino acid identity and 99% sequence identity at the nucleic acid level, differing at only 9 out of 475 amino acids (page 2407, right col., middle and page 2408, Fig. 3). The polypeptides of Seffernick et al., are identical along relatively long stretches of their respective sequences (page 2408, Fig. 3), however, these polypeptides exhibit distinct functions. Thus, even though a first nucleic acid may share identical regions with a second nucleic acid, it is highly unpredictable as to whether the two nucleic acids encode proteins having identical functions.

It is in no way predictable to make a vast amount of changes in the structure and determine retention of function. Further, the claims are directed to a nucleic acid molecule having at least 45% sequence identity to SEQ ID NO:2. Claim 2 only requires that the claimed nucleic acid is 45% identical to a sequence set forth in SEQ ID NO:2 and neither the description of the structure and function of SEQ ID NO: 2, for example, "45% sequence identity to SEQ ID NO:2" is sufficient to be representative of the attributes and features of the entire genus and only represents a partial structure. Note that the claims recite the open language "comprises/having" which is indicative of the enormous variability encompassed by the claims. Therefore, a skilled artisan would not be able to envision the detail chemical structure of the claimed nucleic acid. Additionally, there is no demonstration of such a nucleic acid encoding the claimed protein.

In this case, the necessary guidance has not been provided in the specification. It is well known in the art that a single nucleotide or amino acid change or mutation can destroy the function of the biomolecule in many cases. The skilled artisan would recognize the high degree of unpredictability that all the fragments encompassed in the claims would retain the recited function. Further, the art recognizes that a single nucleotide change can result in a protein that could be non-functional. For example, Tuddenham et al. (Nucleic Acids Research, vol. 22, no. 17, pages 3511-3533, 1994) discloses an established database of nucleotide substitutions, deletions, insertions and rearrangements. The database demonstrates the deleterious impact that various point mutations, deletions and insertions have on the function of a Factor VIII protein. Furthermore, the reference demonstrates that a change of only a single nucleotide may result in loss of function in the protein product (see page 3512 of the reference). Additionally, Heim et al. (PNAS, vol. 91, pages 12501-04, 1994) disclose that a mutated DNA was sequenced and found to contain five amino acid substitutions, only one of which was found to be critical, Tyr66His, in the center of the chromophore. Heim et al. also disclose further site directed mutagenesis and noted that there was tolerance of the substitutions made, however, some mutants were weakly fluorescent (page 12504). Thus, the state of the prior art provides evidence for the high degree of unpredictability as stated above.

The amount of experimentation required is undue: While recombinant and mutagenesis techniques are known, it is not routine in the art to screen for multiple substitutions or multiple modifications, as encompassed by the instant claims. In view of the overly broad scope of the claims, the lack of guidance and working examples provided in the specification, and the high degree of unpredictability as evidenced by the state of the prior art, undue experimentation

would be necessary for a skilled artisan to make and use the entire scope of the claimed nucleic acids.

Thus applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make the claimed invention in a manner reasonably correlated with the scope of the claims. This make and test position is inconsistent with the decisions of *In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970)* where it is stated that "...scope of claims must bear a reasonable correlation to scope of enablement provided by the specification to persons of ordinary skill in the art...". Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily and improperly extensive and undue. See *In re Wands, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988).*

Thus, for all these reasons, the specification is not considered to be enabling for one skilled in the art to make and use the claimed invention as the amount of experimentation required is undue, due to the broad scope of the claims, the lack of guidance and working examples provided in the specification and the high degree of unpredictability as evidenced by the state of the prior art, attempting to construct and test variants of the claimed invention would constitute undue experimentation. Making and testing the infinite number of possible variants to find one that functions as desired is undue experimentation. Therefore, applicants have not provided sufficient guidance to enable one of skill in the art to make and use the claimed invention in a manner that reasonably correlates with the scope of the claims, to be considered enabling.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 2-3 are rejected under 35 U.S.C. 102(b) as being anticipated by HUMAN GENOME SCI. INC. (WO 98/50555 A2, November 12, 1998).

HUMAN GENOME SCI. INC. teach a sequence that is 99.9% identical to the nucleic acid sequence set forth in SEQ ID NO: 2 of the instant application (claim 2, see the attached alignment). Furthermore, the reference discloses vectors (claim 3). Therefore, the limitations of the claims are met by this reference.

Conclusion

8. No claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hope A. Robinson whose telephone number is 571-272-0957. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr, can be reached at (571) 272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hope Robinson, MS

Patent Examiner 12/23/05

HOPE ROBINSON
PATENT EXAMINER

Application No.: 10/758,979

NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

Applicant must file the items indicated below within the time period set the Office action to which the Notice is attached to avoid abandonment under 35 U.S.C. § 133 (extensions of time may be obtained under the provisions of 37 CFR 1.136(a)).

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 C.F.R. 1.821 - 1.825 for the following reason(s):

- [x] 1. This application clearly fails to comply with the requirements of 37 C.F.R. 1.821-1.825. Applicant's attention is directed to the final rulemaking notice published at 55 FR 18230 (May 1, 1990), and 1114 OG 29 (May 15, 1990). If the effective filing date is on or after July 1, 1998, see the final rulemaking notice published at 63 FR 29620 (June 1, 1998) and 1211 OG 82 (June 23, 1998).
- [ ] 2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 C.F.R. 1.821(c).
- [ ] 3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 C.F.R. 1.821(e).
- [x] 4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 C.F.R. 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing."
- [ ] 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A Substitute computer readable form must be submitted as required by 37 C.F.R. 1.825(d).
- [ ] 6. The paper copy of the "Sequence Listing" is not the same as the computer readable form of the "Sequence Listing" as required by 37 C.F.R. 1.821(e).
- [ ] 7. Other:

8. **Applicant Must Provide:**

- [x] An initial or substitute computer readable form (CRF) copy of the "Sequence Listing".
- [x] An initial or substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification.
- [x] A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g).

For questions regarding compliance to these requirements, please contact:

- For Rules Interpretation, call (703) 308-4216 or (703) 308-2923
- For CRF Submission Help, call (703) 308-4212
- For PatentIn software Program Support:
  - HELP DESK: (703) 739-8559, ext 508, M-F, 8 AM to 5 PM EST except holidays
  - Email: PATIN21HELP@uspto.gov
  - To purchase PatentIn sofftware: (703) 306-2600

PLEASE RETURN A COPY OF THIS NOTICE WITH YOUR RESPONSE

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XX
PI   Ausubel FM,  Garsin D,  Mylonakis EE,  Calderwood SB,  Sifri CD;
XX
DR   WPI; 2003-559298/52.
DR   P-PSDB; ADJ33243.
XX
PT   New polypeptide, useful for preparing a composition for treating or
PT   preventing a microbial infection.
XX
PS   Disclosure; SEQ ID NO 1; 140pp; English.
XX
CC   The present invention describes Enterococcal virulence factors (I), which
CC   can act as targets for drug discovery. Also described: (1) an isolated
CC   nucleic acid encoding (I); (2) a vector or host cell comprising the
CC   nucleic acid; (3) a method of screening a compound for effectiveness as
CC   an antagonist of (I); (4) a composition comprising the antagonist
CC   compound; (5) a method of screening a compound for effectiveness in
CC   altering expression of (I); (6) a method of treating an individual; (7) a
CC   vaccine composition comprising the polypeptide and a vehicle; and (8) a
CC   method of treating or preventing a microbial infection. (I) is useful for
CC   preparing a composition having antimicrobial activity for treating or
CC   preventing a bacterial pathogenesis e.g. microbial infection. The present
CC   sequence encodes an Enterococcal photolyase, which is used in the
CC   exemplification of the present invention.
XX
SQ   Sequence 2267 BP; 801 A; 387 C; 416 G; 663 T; 0 U; 0 Other;

  Query Match             100.0%;  Score 1434;  DB 10;  Length 2267;
  Best Local Similarity   100.0%;  Pred. No. 0;
  Matches 1434;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 ATGAAAAGAGTAATATGGTTTAGACGTGATTTACGATTACAGGATAATAAAGCATTAGCA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        568 ATGAAAAGAGTAATATGGTTTAGACGTGATTTACGATTACAGGATAATAAAGCATTAGCA 627

Qy         61 CACGCGTTACAAAATTCTGCAGCTGATGAATTGATTTTATTATTCCAAATGAATCCTCAA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        628 CACGCGTTACAAAATTCTGCAGCTGATGAATTGATTTTATTATTCCAAATGAATCCTCAA 687

Qy        121 CAATTTATTCAAGAAAGTGCTAATCATAACGCTTTTTTTGCAAGCTTAGCCTCGTTCAAA 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        688 CAATTTATTCAAGAAAGTGCTAATCATAACGCTTTTTTTGCAAGCTTAGCCTCGTTCAAA 747

Qy        181 GAACGAATCGATCAAGAGGCACATTTACAAATCATGGTCGGCGAACCATTAGATTTATTT 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        748 GAACGAATCGATCAAGAGGCACATTTACAAATCATGGTCGGCGAACCATTAGATTTATTT 807

Qy        241 TCACGTTTGAAACGCAAATTACCCGATTGGCAGGCCATTTATTTTAATGAAGATACTTGT 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        808 TCACGTTTGAAACGCAAATTACCCGATTGGCAGGCCATTTATTTTAATGAAGATACTTGT 867

Qy        301 GGCTTTGGGGCAAAGCGGGACCAGCAAGCTATGCGCTTTTTTGAAGAAAATAATATTCAG 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        868 GGCTTTGGGGCAAAGCGGGACCAGCAAGCTATGCGCTTTTTTGAAGAAAATAATATTCAG 927

Qy        361 TCTTTCTCTTTTCAAGATGCCTATTTGCATGGCTCTGAAGAAATTAAGAAGAACGATGGC 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        928 TCTTTCTCTTTTCAAGATGCCTATTTGCATGGCTCTGAAGAAATTAAGAAGAACGATGGC 987

Qy        421 AGCAAGTACCAAGTGTTTACGCCCTATTACAATAAATGGAAAGAGGCGCCTAAAGAAACA 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        988 AGCAAGTACCAAGTGTTTACGCCCTATTACAATAAATGGAAAGAGGCGCCTAAAGAAACA 1047

Qy        481 CCGATTCCTGTTTCCTATACAGCTGAAAAAATTTTTAGTGCGTGTCTTTTTCCAGAAGAG 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1048 CCGATTCCTGTTTCCTATACAGCTGAAAAAATTTTTAGTGCGTGTCTTTTTCCAGAAGAG 1107

Qy        541 GAAGCAGCTTATCGTGAACAGATTGCGAGGATTCCTTTAACACACTATAGTGTCGGCGAA 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1108 GAAGCAGCTTATCGTGAACAGATTGCGAGGATTCCTTTAACACACTATAGTGTCGGCGAA 1167

Qy        601 GAAACAGCCAGAAGGCGCTTAAATACTTTTATTGATCAAAAACTTCAATCCTATGAAAAT 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

Db       1168 GAAACAGCCAGAAGGCGCTTAAATACTTTTATTGATCAAAAACTTCAATCCTATGAAAAT 1227

Qy        661 AAGCGTGATTTTCCTTATCAGGATCAAACGAGTCATCTGTCTACTTTTTTAAGAACGGGA 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1228 AAGCGTGATTTTCCTTATCAGGATCAAACGAGTCATCTGTCTACTTTTTTAAGAACGGGA 1287

Qy        721 GAACTTTCGATTCGCACCATTTGGCAAGAGCTTGCATCTGTGCCTTCTAGCTTAAGTAAA 780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1288 GAACTTTCGATTCGCACCATTTGGCAAGAGCTTGCATCTGTGCCTTCTAGCTTAAGTAAA 1347

Qy        781 GAAACCTTCAAAAAAGAATTAGCTTGGCGCGACTTTTACAATATGATCTATAGTGCGTTT 840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1348 GAAACCTTCAAAAAAGAATTAGCTTGGCGCGACTTTTACAATATGATCTATAGTGCGTTT 1407

Qy        841 CCACAACAAAAAGAGGAAGCTATTCAAGAAAAATTTCGTTATATTCAATGGACAAATGAC 900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1408 CCACAACAAAAAGAGGAAGCTATTCAAGAAAAATTTCGTTATATTCAATGGACAAATGAC 1467

Qy        901 CCAGAAATGTTTGTCAAGTGGCAAAAAGGGGAGACGGGGTACCCTATAATTGATGCCGCA 960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1468 CCAGAAATGTTTGTCAAGTGGCAAAAAGGGGAGACGGGGTACCCTATAATTGATGCCGCA 1527

Qy        961 ATGCGACAACTGAATCAAACTGGTTGGATGCACAATCGCTTAAGAATGATTACTGCCTCT 1020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1528 ATGCGACAACTGAATCAAACTGGTTGGATGCACAATCGCTTAAGAATGATTACTGCCTCT 1587

Qy       1021 TTTTTAGTTAAAAATTTACACATCGATTGGCGTTGGGGTGAAAAATACTTTCAAAAAATG 1080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1588 TTTTTAGTTAAAAATTTACACATCGATTGGCGTTGGGGTGAAAAATACTTTCAAAAAATG 1647

Qy       1081 TTGATTGACTATGATGCTGCCAATAATATCGGTGGCTGGCAATGGGCTGCTTCAACAGGA 1140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1648 TTGATTGACTATGATGCTGCCAATAATATCGGTGGCTGGCAATGGGCTGCTTCAACAGGA 1707

Qy       1141 ACGGACGCTGTCCCTTATTTTCGGATTTTTAATCCAATTATCCAGTCAAAAAAATTTGAT 1200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1708 ACGGACGCTGTCCCTTATTTTCGGATTTTTAATCCAATTATCCAGTCAAAAAAATTTGAT 1767

Qy       1201 AATGACGGCCAGTTCATCAAAAAATATGTTCCAGAACTTAAGCAAGTGCCACAAAAGTAT 1260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1768 AATGACGGCCAGTTCATCAAAAAATATGTTCCAGAACTTAAGCAAGTGCCACAAAAGTAT 1827

Qy       1261 ATTCATCAACCAAATCTAATGAACGAAGCCTTACAAACGCAATATCATGTACATTTAGGA 1320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1828 ATTCATCAACCAAATCTAATGAACGAAGCCTTACAAACGCAATATCATGTACATTTAGGA 1887

Qy       1321 GAAAATTATCCAAAACCCATTGTCGATTATGCATCAAGTAAAAAACAAACATTGTTTCTA 1380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1888 GAAAATTATCCAAAACCCATTGTCGATTATGCATCAAGTAAAAAACAAACATTGTTTCTA 1947

Qy       1381 TATGAAGCGAGCAAAGAAATTCATCAAGAAATGAACAATCCAAGGTTTCAATAA 1434
              ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1948 TATGAAGCGAGCAAAGAAATTCATCAAGAAATGAACAATCCAAGGTTTCAATAA 2001


RESULT 3
AAX13199
ID   AAX13199 standard; DNA; 5277 BP.
XX
AC   AAX13199;
XX
DT   19-MAR-1999  (first entry)
XX
DE   Enterococcus faecalis genome contig SEQ ID NO:262.
XX
KW   Enterococcus faecalis; contig; detection; Enterococcal infection;
KW   vaccine; attenuation; computer readable medium; ds.
XX
OS   Enterococcus faecalis.
XX
PN   WO9850555-A2.
XX
PD   12-NOV-1998.
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XX
PP 04-MAY-1998; 98WO-US008985.
XX
PR 06-MAY-1997; 97US-0044031P.
PR 16-MAY-1997; 97US-0046655P.
PR 14-NOV-1997; 97US-0066009P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
XX
PI Kunsch CA, Dillon PJ, Barash SC;
XX
DR WPI; 1999-045171/04.
XX
PT New isolated Enterococcus faecalis polynucleotides and polypeptides -
PT used to develop products for the detection of Enterococcus and for use in
PT vaccines for prevention or attenuation of Enterococcus infection.
XX
PS Claim 1; Page 1251-1254; 2084pp; English.
XX
CC A computer readable medium has been developed which has recorded on it
CC 982 nucleotide sequences isolated from the Enterococcus faecalis genome.
CC AAX12938 to AAX13919 represent these nucleotide sequences which are
CC primary nucleotide sequences, also known as contigs. The computer-based
CC system can identify fragments of the Enterococcus faecalis genome with
CC commercial importance. The products can be used to detect the presence of
CC Enterococcus faecalis in samples. They can also be used for diagnosing
CC Enterococcal infection in an animal and monitoring progression of
CC disease, and for identifying agents which can be used to modulate the
CC growth or pathogenicity of Enterococcus faecalis, or another related
CC organism, in vivo or in vitro. In particular the polypeptides encoded by
CC the Enterococcus faecalis nucleotide sequences can be used in vaccines to
CC prevent or attenuate an Enterococcal infection
XX
SQ Sequence 5277 BP; 1699 A; 946 C; 911 G; 1705 T; 0 U; 16 Other;

Query Match 99.9%; Score 1432.8; DB 2; Length 5277;
Best Local Similarity 99.8%; Pred. No. 0;
Matches 1431; Conservative 3; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 ATGAAAAGAGTAATATGGTTTAGACGTGATTTACGATTACAGGATAATAAAGCATTAGCA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1046 ATGAAAAGAGTAATATGGTTTAGACGTGATTTACGATTACAGGATAATAAAGCATTAGCA 1105

Qy         61 CACGCGTTACAAAATTCTGCAGCTGATGAATTGATTTTATTATTCCAAATGAATCCTCAA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1106 CACGCGTTACAAAATTCTGCAGCTGATGAATTGATTTTATTATTCCAAATGAATCCTCAA 1165

Qy        121 CAATTTATTCAAGAAAGTGCTAATCATAACGCTTTTTTTGCAAGCTTAGCCTCGTTCAAA 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1166 CAATTTATTCAAGAAAGTGCTAATCATAACGCTTTTTTTGCAAGCTTAGCCTCGTTCAAA 1225

Qy        181 GAACGAATCGATCAAGAGGCACATTTACAAATCATGGTCGGCGAACCATTAGATTTATTT 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1226 GAACGAATCGATCAAGAGGCACATTTACAAATCATGGTCGGCGAACCATTAGATTTATTT 1285

Qy        241 TCACGTTTGAAACGCAAATTACCCGATTGGCAGGCCATTTATTTTAATGAAGATACTTGT 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1286 TCACGTTTGAAACGCAAATTACCCGATTGGCAGGCCATTTATTTTAATGAAGATACTTGT 1345

Qy        301 GGCTTTGGGGCAAAGCGGGACCAGCAAGCTATGCGCTTTTTTGAAGAAAATAATATTCAG 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1346 GGCTTTGGGGCAAAGCGGGACCAGCAAGCTATGCGCTTTTTTGAAGAAAATAATATTCAG 1405

Qy        361 TCTTTCTCTTTTCAAGATGCCTATTTGCATGGCTCTGAAGAAATTAAGAAGAACGATGGC 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1406 TCTTTCTCTTTTCAAGATGCCTATTTGCATGGCTCTGAAGAAATTAAGAAGAACGATGGC 1465

Qy        421 AGCAAGTACCAAGTGTTTACGCCCTATTACAATAAATGGAAAGAGGCGCCTAAAGAAACA 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1466 AGCAAGTACCAAGTGTTTACGCCCTATTACAATAAATGGAAAGAGGCGCCTAAAGAAACA 1525

Qy        481 CCGATTCCTGTTTCCTATACAGCTGAAAAAATTTTTAGTGCGTGTCTTTTTCCAGAAGAG 540
              ||||||||||||||||||||||||||:||||||||||||||||||||||||||||||||
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Db       1526 CCGATTCCTGTTTCCTATACAGCTGMAAAAATTTTTAGTGCGTGTCTTTTTCCAGAAGAG 1585

Qy        541 GAAGCAGCTTATCGTGAACAGATTGCGAGGATTCCTTTAACACACTATAGTGTCGGCGAA 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1586 GAAGCAGCTTATCGTGAACAGATTGCGAGGATTCCTTTAACACACTATAGTGTCGGCGAA 1645

Qy        601 GAAACAGCCAGAAGGCGCTTAAATACTTTTATTGATCAAAAACTTCAATCCTATGAAAAT 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1646 GAAACAGCCAGAAGGCGCTTAAATACTTTTATTGATCAAAAACTTCAATCCTATGAAAAT 1705

Qy        661 AAGCGTGATTTTCCTTATCAGGATCAAACGAGTCATCTGTCTACTTTTTTAAGAACGGGA 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1706 AAGCGTGATTTTCCTTATCAGGATCAAACGAGTCATCTGTCTACTTTTTTAAGAACGGGA 1765

Qy        721 GAACTTTCGATTCGCACCATTTGGCAAGAGCTTGCATCTGTGCCTTCTAGCTTAAGTAAA 780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1766 GAACTTTCGATTCGCACCATTTGGCAAGAGCTTGCATCTGTGCCTTCTAGCTTAAGTAAA 1825

Qy        781 GAAACCTTCAAAAAAGAATTAGCTTGGCGCGACTTTTACAATATGATCTATAGTGCGTTT 840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1826 GAAACCTTCAAAAAAGAATTAGCTTGGCGCGACTTTTACAATATGATCTATAGTGCGTTT 1885

Qy        841 CCACAACAAAAAGAGGAAGCTATTCAAGAAAAATTTCGTTATATTCAATGGACAAATGAC 900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1886 CCACAACAAAAAGAGGAAGCTATTCAAGAAAAATTTCGTTATATTCAATGGACAAATGAC 1945

Qy        901 CCAGAAATGTTTGTCAAGTGGCAAAAAGGGGAGACGGGGTACCCTATAATTGATGCCGCA 960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1946 CCAGAAATGTTTGTCAAGTGGCAAAAAGGGGAGACGGGGTACCCTATAATTGATGCCGCA 2005

Qy        961 ATGCGACAACTGAATCAAACTGGTTGGATGCACAATCGCTTAAGAATGATTACTGCCTCT 1020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2006 ATGCGACAACTGAATCAAACTGGTTGGATGCACAATCGCTTAAGAATGATTACTGCCTCT 2065

Qy       1021 TTTTTAGTTAAAAATTTACACATCGATTGGCGTTGGGGTGAAAAATACTTTCAAAAAATG 1080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2066 TTTTTAGTTAAAAATTTACACATCGATTGGCGTTGGGGTGAAAAATACTTTCAAAAAATG 2125

Qy       1081 TTGATTGACTATGATGCTGCCAATAATATCGGTGGCTGGCAATGGGCTGCTTCAACAGGA 1140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2126 TTGATTGACTATGATGCTGCCAATAATATCGGTGGCTGGCAATGGGCTGCTTCAACAGGA 2185

Qy       1141 ACGGACGCTGTCCCTTATTTTCGGATTTTTAATCCAATTATCCAGTCAAAAAAATTTGAT 1200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2186 ACGGACGCTGTCCCTTATTTTCGGATTTTTAATCCAATTATCCAGTCAAAAAAATTTGAT 2245

Qy       1201 AATGACGGCCAGTTCATCAAAAAATATGTTCCAGAACTTAAGCAAGTGCCACAAAAGTAT 1260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2246 AATGACGGCCAGTTCATCAAAAAATATGTTCCAGAACTTAAGCAAGTGCCACAAAAGTAT 2305

Qy       1261 ATTCATCAACCAAATCTAATGAACGAAGCCTTACAAACGCAATATCATGTACATTTAGGA 1320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2306 ATTCATCAACCAAATCTAATGAACGAAGCCTTACAAACGCAATATCATGTACATTTAGGA 2365

Qy       1321 GAAAATTATCCAAAACCCATTGTCGATTATGCATCAAGTAAAAAACAAACATTGTTTCTA 1380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2366 GAAAATTATCCAAAACCCATTGTCGATTATGCATCAAGTAAAAAACAAACATTGTTTCTA 2425

Qy       1381 TATGAAGCGAGCAAAGAAATTCATCAAGAAATGAACAATCCAAGGTTTCAATAA 1434
              ||::|||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2426 TAKSAAGCGAGCAAAGAAATTCATCAAGAAATGAACAATCCAAGGTTTCAATAA 2479
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RESULT 4
ABS98994
ID ABS98994 standard; DNA; 5277 BP.
XX
AC ABS98994;
XX
DT 18-DEC-2002 (first entry)
XX
DE Enterococcus faecalis contig sequence #262.
XX